

Problem sets(1)

State which of the following statements is true and which is wrong and correct the wrong statements:

1. Statistics is commonly divided into two branches called descriptive statistics and summary statistics.
2. Calculation of population parameters is usually either impossible or excessively time consuming and costly.
3. The basis for inferential statistics is the ability to make decisions about population parameters without having to complete a census of the population.
4. All numerical data must be analyzed statistically in the same way because all of them are represented by numbers.
5. The manner in which numerical data can be analyzed statistically depends on the level of data measurement represented by numbers being analyzed.
6. Numbers which are used to classify or categorize the observations represent data measured at the nominal level.
7. Numbers which are used to rank-order the performance of workers represent data measured at the interval level.
8. Nominal and ordinal data are sometimes referred to as quantitative data.
9. Interval- and Ratio-level data are sometimes referred to as quantitative data.
10. Experimentation methods help describing the current situation of the interested phenomena.
11. We can always generalize the samples results on the population.
12. In order to be able to apply descriptive statistics, data has to be collected from all the entities of the population.
13. We can use the experimentation method when studying the effect of using the seat belt on the driver's injury.
14. A numerical value used as a summary measure for a sample such as sample mean is known as a parameter.
15. A survey to collect data on the entire population is a census.

16. Twenty-five percent of a sample of 200 professional tennis players indicated that their parents did not play tennis. Based on this sample, we estimate that approximately 25% of the parents of all professional tennis players did not play tennis, plus or minus 5%. This is an example of using inferential statistics.

17. The Commissioner of health in the state of California wanted to study malpractice litigation in los Angeles. A sample of 32000 medical records was selected from all 3.5 million patients who were discharged during the year 2003. Using the information from the sample to make conclusions about malpractice litigation in los Angeles is an example of doing descriptive satatistics.

18. A marketing research firm selects a random sample of adults and asks them a list of questions regarding their beverage preferences. The type of data collection involved is an experiment.

19. Statistical inference is the process of making an estimate, prediction, or decision about a population based on sample data.

Multiple Choice

1. On discovering an improperly adjusted drill press, Jack Joyner, Director of Quality Control, ordered an inspection of every fifth casting drilled during the evening shift. Jack is ordering a _____.

- a) statistic from the castings
- b) census of the castings
- c) sample of the castings
- d) sorting of the castings
- e) parameter of the castings

2. A person has decided to code a particular set of sales data. A value of 0 is assigned if the sales occurred on a weekday, and a value of 1 means it happened on a weekend. This is an example of _____.

- a) interval level data
- b) ordinal level data
- c) nominal level data
- d) ratio level data
- e) relative level data

3. Members of the accounting department's clerical staff were asked to rate their supervisor's leadership style as either (1) authoritarian or (2) participatory. This is an example of _____.

- a) interval level data
- b) ordinal level data
- c) nominal level data
- d) ratio level data
- e) relative level data

4. The social security number of employees would be an example of what level of data measurement?

- a) Interval level data
- b) Ordinal level data
- c) Nominal level data
- d) Ratio level data
- e) Relative level data

5. If it were not for the existence of an "absolute zero," ratio data would be considered the same as _____.

- a) interval level data
- b) ordinal level data
- c) nominal level data
- d) ratio level data
- e) relative level data

6. Jessica Salas, president of Salas Products, is reviewing the warranty policy for her company's new model of automobile batteries. Life tests performed on a sample of 100 batteries indicated an average life of seven years under normal usage. Jessica recommended a six-year warranty period for the new model. This is an example of _____.

- a) descriptive statistics
- b) executive forecasting
- c) population derivation
- d) sample persuasion
- e) inferential statistics

7. On discovering an improperly adjusted drill press, Jack Joyner, Director of Quality Control, ordered an inspection of every fifth casting drilled during the evening shift. Less than 1% of the castings were defective; so, Jack released the evening shift's production to assembly. This is an example of _____.

- a) nonparametric statistics
- b) nominal data
- c) descriptive statistics
- d) inferential statistics
- e) judgmental statistics

8. The Universal Pulp Company has a plant in Portland, Oregon. Management wants to determine the average number of sick days taken per worker in this plant in 2006. To do this, the management gathers records on all the workers in the plant and averages the number of sick days taken in 2006 by each worker. This process is using _____.

- a) nonparametric statistics
- b) nominal data
- c) descriptive statistics
- d) inferential statistics
- e) a census

9. The Magnolia Swimming Pool Company wants to determine the average number of years it takes before a major repair is required on one of the pools that the company constructs. The president of the company asks Rick Johnson, a company accountant, to randomly contact fifty families that built Magnolia pools in the past ten years and determine how long it was in each case until a major repair. The information will then be used to estimate the average number of years until a major repair for all pools sold by Magnolia. The average based on the data gathered from the fifty families can best be described as a _____.

- a) parameter
- b) sample
- c) population
- d) statistic
- e) frame

10. The Chamber of Commerce wants to assess its membership's opinions of the North American Free Trade Agreement. One-hundred of the 2,000 members are randomly selected and contacted by telephone. Seventy-five reported an overall favorable opinion, and twenty-five reported an overall unfavorable opinion. The proportion, 0.75, is a _____.

- a) parameter
- b) statistic
- c) population
- d) sample
- e) frame

11. What proportion of San Diego's registered voters favor trade restrictions with China? In an effort to determine this, a research team calls every registered voter in San Diego and contacts them. The proportion determined from the data gathered is a _____.

- a) parameter
- b) sample
- c) population
- d) statistic
- e) frame

12. How much inventory do Christmas tree sales lots keep? A researcher goes from location to location around the city counting the number of trees in each lot. These numbers most likely represent what level of data?

- a) Interval level
- b) Ordinal level
- c) Nominal level
- d) Ratio level
- e) Relative level

13. A large manufacturing company in Indianapolis produces valves for the chemical industry. According to specifications, one particular valve is supposed to have a five-inch opening on the side. Quality control inspectors take random samples of these valves just after the hole is bored. They measure the size of the hole in an effort to determine if the machine is out-of-adjustment. The measurement of the diameter of the hole represents which level of data?

- a) Interval level
- b) Ordinal level
- c) Nominal level

- d) Central level
- e) Ratio level

14. A business is attempting to find the best small town in the United States in which to relocate. As part of the investigation, the elevations of all small towns in the United States are researched. Some towns are located high in the Rockies with elevations over 8,000 feet. There are even some towns located in the south central valley of California with elevations below sea level. These elevations can best be described as which level of data?

- a) Interval level
- b) Ordinal level
- c) Nominal level
- d) Ratio level
- e) Relative level

15. Some hotels ask their guests to rate the hotel's services as excellent, very good, good and poor. This is an example of the :

- a. Nominal.
- b. Ordinal.
- c. Interval.
- d. Ratio.

16. Political party affiliation for voters recorded using the code: 1=Democrat. 2=Republican. 3=Independent.

- a. Nominal.
- b. Ordinal.
- c. Interval.
- d. Ratio.

17. The classification of student major (accounting, economics, management, marketing, others) is an example of :

- a. Nominal.
- b. Ordinal.
- c. Interval.
- d. Ratio.

18. You take a random sample of 100 students at your university and find that their average score in an exam is 75. you use this information to help you estimate the average score for all students at your university, then you are doing what branch of statistics:

- a. Descriptive statistics.
- b. Inferential statistics.
- c. Sample statistics
- d. Population statistics

Answer the following questions:

1. Before leaving a particular restaurant, customers are asked to respond to the questions listed below.

For each question determine whether the possible responses are nominal, ordinal, interval, ratio:

- a. What is the approximate distance (in miles) between this restaurant and your residence?
- b. Have you ever eaten at this restaurant before?
- c. On how many occasions have you eaten at that restaurant before?
- d. Which of the following attributes of this restaurant do you find most attractive: service, prices, quality of the food, or the menu?
- e. What is your overall rating of the restaurant: excellent, good, fair, or poor?

2. At Grand Rapids Community College, administrators want to determine the average commuting distance for their students who commute to school. They randomly select 150 students who commute and ask them the distance of their commute to campus. From this group a mean of 18.2 miles is computed.

- a. Determine the parameter.
- b. Determine the statistic.
- c. Describe the population.
- d. Describe the sample.